Steve Dixon

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Sent: Monday, September 19, 2005 8:17 PM
Attach: NoVa CRITERIACONFIGURATION LIST.xls
Subject: NOvA Meeting Minutes 19SEP05

MEETING MINUTES

NOvA Project
FESS/Engineering Project No. 15-1-3
Date: September 19, 2005

Objective: The objective of this task is to receive CD-1 approval for the NOvA project

Attendees:

- FESS/E - G. Van Zandbergen, C. Federowicz, M. Olson, E. Huedem, T. Lackowski, E. Huedem, L. Hammond, J. Santic, J. Niehoff, S. Dixon
- Holabird & Root - G. Grunloh, E. Wagner

This weekly meeting will discuss progress on developing a conceptual design report for the conventional construction of the NOvA Project.
The scope of this task includes:

1. Develop WBS Outline
2. Design Alternative Studies (overburden, crane, building, etc..)
3. Integrated Cost and Schedule in Open Plan
4. Develop Conceptual Design Report package
    - Text
    - Drawings
    - Cost Estimate
    - Schedule
5. Integrated Contingency/Risk Analysis
6. Identification of long lead time items
7. Value Engineering

DISCUSSION TOPICS
Listed below are the discussion topics for this project:

General

1. There was discussion on the scintillator oil. For the purposes of CDR development, the oil is assumed to have a flashpoint of 200 degrees F or higher.
2. J. Niehoff showed the current maps and location of the building sections.
3. There was a review of the detector components which resulted in a discussion of the various support

systems. The comments are incorporated into the sections below.

4. Not Discussed During Meeting: Attached is a Criteria Configuration List which begins to detail the requires for the various spaces in the facility. As we proceed, we'll begin to fill this in.

Scintillator Unloading Facility

1. In order to take advantage of the sloping site, the Scintillator Unloading Facility (SUF) could be relocated "downhill" towards the upstream end of the building and adjacent to the plastics loading dock.
2. The SUF is sized to accommodate one week's worth of scintillator delivery housed within a conditioned space.
3. The SUF includes provisions for heating the space to keep the scinitillator from being damaged. The proposal includes propane heat with a pilot light to ensure that the scintillator is unaffected during an unexpected power outage. Other methods of achieving the same goal will be investigated. For example, an electric connection to power the tanker heater could be used. This would likely require that the heater circuit be fed from the emergency generator supplied circuit. If acceptable to the project, this could also result in a smaller building,
4. The SUF is based on a tanker truck. Other methods of delivery could include a containerized solution which would affect the design of the facility.
5. The design includes a system to collect any scintillator spills and route them through a triple basin sump to separate any scinitillator from water. The arrangement of the system could be optimized for the trailer/container selection.
6. Bumper posts should be included in the design.
7. The doors are assumed to be coiling to avoid the need for fire protection below the open doors. Other methods could be investigated.
8. The SUF is assumed to be protected by a foam-type fire suppression system.
9. There is no apparent use for the SUF after the completion of the filling of the detector.

Detector

1. The detector is based on a extruded PVC module that is 4.2' wide x 53' long x 2.3 inches deep
2. Each module has 32 cells
3. A plane is comprised of 12 modules
4. A subblock is comprised of 8 planes (12x8=96 modules)
5. A block is comprised of 4 sub-blocks (12x8x4=384 modules)
6. The detector is comprised of 62 blocks (62x12x8x4=23,808 modules)
7. The orientation of the planes will with the manifold located on either the top, left or right side of the detector. This will require access on both sides and the top of the detector.
8. Each of the 23,808 modules will require the following connections
    - Oil fill
    - Oil Vent
    - Electric power
    - Communication
    - Water cooling supply/return
    - Nitrogen
9. The electrical load per module is estimated to be between 4 and 15 watts
10. The shielding overburden is intended for cosmic ray shielding.
11. It is intended that a portion of the detector will be operational prior to the assembly/fill of the remaining detector. This indicates that the systems supporting the operation of the detector (power/cooling/data/nitrogen) must be in place and functioning fairly early in the project schedule.
12. It is not apparent how the partially assembled and scintillator filled detector will be supported during subsequent detector assembly operations.
13. There was a discussion of the need and use of the crane for detector assembly. More information/input is needed.

Building

1. The current drawings should be revised to include spaces for

- Tech Space
- Control Room
- Meeting Room/Lunch area
- Scinillator pump room/test room
- Bathrooms/Lockers/Mudroom
- Tech Space

2. It may be possible to provide trailers outside the building for the support spaces and then relocate them into the loading dock after the detector assembly is complete.

Mechanical

1. The detector requirements will drive the mechanical design.
2. Verification of the requirements for temperature and humidity ranges is required
3. Additional information concerning the water cooled electronics is required.

ACTION ITEMS
The following action items have been identified

FESS/E

1. Building layout (TL, SD, GV)
2. Investigate well requirements for life safety use (JN)
3. Issue letter to Shimer detailing basis for scintillator (SD)
4. Provide Holabird with scaled topo maps of both site (JN)

Holabird & Root
In order to understand the impact of the project of constructing the building in Minnesota, Holabird will begin investigating the following:

1. Design points for architectural/structural and mechanical systems (frost depth, snow loads, wind loads, earthquake, temperature ranges, etc..)
2. Construction methods different from Batavia, Illinois (utilities, etc..)
3. Construction cost impact of remote site
4. Major unit price costs (excavation, concrete, steel, etc..)
5. Availability of concrete (ready mix, batch plant, etc..)
6. Steel building strategy

These impacts and items will be used as the basis for developing the cost estimate and schedule. Holabird will also construct a topo model of both sites for assisting with the development of massing schemes.

Experiment Provided Information Required

1. Site Power availability - type and voltage
2. Power requirements for each module electronic
3. Acceptable temperature range for detector
4. Acceptable humidity range
5. Water cooling temperature range
6.

SCHEDULE
The following preliminary milestones have been discussed.

- Next Progress Meeting: September 26, 2005
- Draft CDR complete: December 3, 2005
- Director's Review: Mid-January 2005

Please let S. Dixon (steveo@fnal.gov) know of any corrections/additions

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DRAFT NOvA CRITERIA CONFIGURATION LIST		
STRUCTURE	**Requirement**	**Comments /Source**
DETECTOR HALL **Detector Space Requiremnts**		
Base detector Size		
Upstream clearance requiremetns		
Downstream Clearance Requirements		
Side Aisle		
Detector Orientation		
Detector Positioning	Detector Assembly Area to be positioned downstream	WAG
Positioning Tolerance	(+/-) 10 degregg to Ray from NuMi	WAG
Flow Relationships		
Detector Assembly Area	Direct Connection during assembly, 10' Shielding during operations	
Oil Receiving Building	Give vertical relation and maximum horz. Access, end or centor of	
Detector Shielding	3 meters of earth or concrete to outside	
Constuction and Tolerance		
Floor Loading	1000 PSF.	
Settlement / Swelling Tolerances		
Floor Flatness Tolerance	(+/-)1/4" in 10" - 1" (+/-) to stated Elevation	
Floor Water Tightness (Spill Control)		
Floor slope	1/8 " / Foot to trench drains	
Walls Water Tightness (spill Control)		
Radon Control		
Material And Personnel Handling		
Access		
Material Handling	10 Ton OH Crane	
Exit Requirements		
ES&H Requirements		
Shielding	None required for personnel protection	
Security		
Industrial Safety Requirements	Eye Wash Stations @ 300 '	
Mechanical, Plumbing and Electrical Services		
HVAC		
Temperature Requiremsnts		
Temp. Stratification Requiremnts		
Humidity Requirements		
Process Water Systems		
Chilled Water		
Deironized Water		
Dosmetic Water		
Sanitary Sewer		
Other Interior Drainage Contol System		
Fire Protection		

DRAFT NOvA CRITERIA CONFIGURATION LIST		
STRUCTURE	**Requirement**	**Comments /Source**
Fire Detection		
Ground Water Sump and Drainge		
Drainage System		
Sump		
Elecrical		
Lighting Levels		
User Power		
Welding Outlets		
Utility Outlets		
Shunt Trips and Emergency Shut-Offs		
DETECTOR ASSEMBLY AREA		
DETECTOR		
Detector Component Space Requiremnts		
Detector Assembly Table Size		
Clearance requiremetns		
Assemble Equipment Size		
Test Equipment Size		
Flow Relationships		
Detector Hall		
Truck Recieving		
Shielding		
Constuction and Tolerance		
Floor Loading		
Settlement / Swelling Tolerances		
Floor Flatness Tolerance		
Floor Water Tightness (Spill Control)		
Floor slope		
Walls Water Tightness (spill Control)		
Material And Personnel Handling		
Access		
Material Handling		
Exit Requirements		

DRAFT NOvA CRITERIA CONFIGURATION LIST		
STRUCTURE	**Requirement**	**Comments /Source**
ES&H Requirements		
Shielding		
Security		
Industrial Safety Requirements		
Mechanical, Plumbing and Electrical Services		
HVAC		
Temperature Requirements		
Temp. Stratification Requiremnts		
Ventilation Requirements		
Humidity Requirements		
Process Water Systems		
Chilled Water		
Deironized Water		
Dosmetic Water		
Sanitary Sewer		
Other Interior Drainage Contol System		
Fire Protection		
Fire Detection		
Ground Water Sump and Drainge		
Drainage System		
Sump		
Elecrical		
Lighting Levels		
User Power		
Welding Outlets		
Utility Outlets		
Shunt Trips and Emergency Shut-Offs		
Receiving / Upper support area		
Truck Receiving		
Number of trucks		
Truck size		
Floor Loading	H-20 at truck Bay, 100 PSF Mech/Elec Spaces, 50PSF Personnel areas	
Machine Shop	XXXSF	
Cafiteria / Lounge Area	XXXSF	
Tech / Office Space	XXXSF	
Storage	XXXSF	
Mechanical Space		
Electruical Space		

DRAFT NOvA CRITERIA CONFIGURATION LIST		
STRUCTURE	**Requirement**	**Comments /Source**
Oil Receiving Building		
Size requirements		
Number of trucks		
Base detector Size		
Upstream clearance requiremetns		
Downstream Clearance Requirements		
Side Aisle		
Detector Orientation		
Detector Positioning		
Positioning Tolerance		
Flow Relationships		
Detector Assembly Area		
Oil Receiving Building		
Shielding		
Constuction and Tolerance		
Floor Loading		
Settlement / Swelling Tolerances		
Floor Flatness Tolerance		
Floor Water Tightness (Spill Control)		
Floor slope		
Walls Water Tightness (spill Control)		
Radon Control		
Material And Personnel Handling		
Access		
Material Handling		
Exit Requirements		
ES&H Requirements		
Shielding		
Security		
Industrial Safety Requirements		
Mechanical, Plumbing and Electrical Services		
HVAC		
Temperature Requiremsnts		
Temp. Stratification Requiremnts		
Humidity Requirements		
Process Water Systems		
Chilled Water		
Deironized Water		
Dosmetic Water		

DRAFT NOvA CRITERIA CONFIGURATION LIST		
STRUCTURE	**Requirement**	**Comments /Source**
Sanitary Sewer		
Other Interior Drainage Contol System		
Fire Protection		
Fire Detection		
Ground Water Sump and Drainge		
Drainage System		
Sump		
Elecrical		
Lighting Levels		
User Power		
Welding Outlets		
Utility Outlets		
Shunt Trips and Emergency Shut-Offs		
ELECTRICAL		
Primary Source		
User Power Transformer	1500KV	
House Power Transformer	Shared with User Power	
Land acquisition	TBD	
Off-Site Support		
Alignment Network:	30exterior monuments	
Construction Support/Spoil Disposal:	**TBD**	
Site Preparation		
Clearing/Grading: TBD acres	Clearing/Grading: TBD acres	
Drainage: TBD LF	Drainage: TBD LF	
Fencing: TBD LF	Fencing: TBD LF	
Waste and Water Systems:	Waste and Water Systems:	
On-site water treatment plant for peak population of TBD	On-site water treatment plant for peak population of TBD	
TBD LF water distribution system	TBD LF water distribution system	
On-site sewage treatment plant for peak population of TBD	On-site sewage treatment plant for peak population of TBD	
TBD LF sanitary sewer lines	TBD LF sanitary sewer lines	
Communications Systems:	Communications Systems:	

DRAFT NOvA CRITERIA CONFIGURATION LIST		
STRUCTURE	**Requirement**	**Comments /Source**
PBX for No. TBD lines	PBX for No. TBD lines	
TBD LF telephone cable	TBD LF telephone cable	
TBD LF SCADA cable	TBD LF SCADA cable	
Roads/Paving: TBD SY	Roads/Paving: TBD SY	

8/25/2005
Configuation Date

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